No. 1529

# INDEX TO VOLUME 37

NOTE

1 Names of authors and discussors, also deceased members preceding an obituary notice, are in caps and small caps. A discussor is distinguished from the author of a paper by (*D*), placed after the name of the paper.

2 Titles of papers, where placed after the name of the author, and appearing in their exact form, are in italic. Papers are indexed not under their title but under their subject matter.

3 The Society is not responsible as a body for the statement of facts or opinions in the papers and discussions.


PAGE

ABBOTT, ROBERT R. *A Comparison of the Properties of a Nickel, Carbon and Manganese Steel before and after Heat Treatment*... 39
Abrasions, comparative.....309, 318, 324, 325
Abrasive ..... 323
Abrasive wheels, safety code for..... 1221
Accident prevention, employers and..... 899
Accidents and payroll compared..... 894
Accuracy of meters, comparative..... 786
Acknowledgment, standard flanges..... 1539
ADAMS, DAN. *Relative Value of Private and Purchased Electric Power for Textile Mills*.....565, 588
ADAMS, WALTER HOLBROOK. *The Diesel Engine and its Applications in Southern California* ..... 447
ADLER, ALPHONSE A. Four-wheel trucks for passenger cars (*D*)..... 702
Air, flow through orifice meters..... 765
  formula for ..... 767
  volume in holder, varying temperature..... 773
Air compressors, rules for testing..... 1342
  test ..... 1455
Alden dynamometer, illustrated..... 131
ALDRICH, WM. S. Effect of humidity on belts (*D*)..... 140
Alford, L. P., bearings and their lubrication, cited.....169, 199
Aliges, C., four-axle locomotive, cited..... 633
Allen, R. W., heat transmission in condensers, cited..... 1001
Ammonia, recovery ..... 1231
  sulphate of, consumption..... 1260
ANCONA, JOHN F. Stoneware and porcelain strength (*D*)..... 818
ANDERSON, HAROLD BENTLEY, obituary..... 1497
Andrew, J. H., effect of soda in boilers, cited..... 1137
ANDREWS, JACOB ROBINSON, obituary..... 1497

PAGE

Anemometers ..... 1282
Annual meeting ..... 346
Ash, sampling ..... 1301
sampling and drying ..... 1300
AVERILL, E. A. Parallel and radial loco axles (*D*) ..... 674
Axle shaft, heat treatment of ..... 151
operation of locomotive ..... 653

BABCOCK, ALLEN H. *A Novel Method of Handling Boilers to Prevent Corrosion and Scale* ..... 1105
Bairstow, laws of similitude, cited ..... 1041
BAKER, CHARLES WHITING. Accident prevention (*D*) ..... 907
BALL, WALTER SEAVER, obituary ..... 1498
BANCEL, PAUL A. *Circulation in Horizontal Water Tube Boilers* ..... 1011
High vacuum surface condensers (*D*) ..... 1009
*Performance and Design of High Vacuum Surface Condensers* ..... 975
Turbines vs. engines (*D*) ..... 763
BARBA, W. P. *Industrial Safety and Principles of Management* ..... 909
Barometers ..... 1285
BARR, JOHN H. Safety and the manufacturer (*D*) ..... 897
Safety standards (*D*) ..... 887
BARRINGER, L. E. Stoneware and porcelain strength (*D*) ..... 815
BARRUS, GEO. H., testing heat insulators, cited ..... 922
BARSTOW, J. S. *Turbines vs. Engines in Units of Small Capacities* ..... 751
BARTH, CARL G. Effect of humidity on belts (*D*) ..... 129
Production and costs (*D*) ..... 122
Taylor memorial, quoted ..... 1473
BAYLEY, GUY L. *Engineering Features of the Panama-Pacific International Exposition* ..... 351
Beams, design of concrete increasing strength of ..... 225, 232, 233
Bearing, ideal ..... 188
Bearings, carrying power ..... 190, 197
laws of lubrication of ..... 167
Becker, friction experiments, quoted ..... 100
Behne, locomotive-design, cited ..... 666
Beilby, gas producers, cited ..... 1231
Belts, effect of humidity on ..... 129
BERNARD, H. B. Flow of air through orifice meters (*D*) ..... 787
BEYER, DAVID S. Safety standards (*D*) ..... 890
BIGELOW, CHARLES H. Foundations (*D*) ..... 840
Heating textile mills by hot water (*D*) ..... 562
Private vs. purchased power (*D*) ..... 586
BIRD, WILLIAM W. Production and costs (*D*) ..... 118
*The Effect of Relative Humidity on an Oak Tanned Leather Belt* ..... 129
BIRKINBINE, JOHN, obituary ..... 1498
Blankenburg, Rudolph, Taylor memorial, quoted ..... 1494
Blowers, rules for testing ..... 1342

PAGE
Boiler, corrosion, prevention of ... 1105
circulation in water tube ... 1011
design, fire tube ... 619
furnace and grate efficiency ... 1311
handling to prevent corrosion ... 1105
location of instruments ... 1438
log, chart of ... 1437
rules for evaporative tests ... 1304
scale, prevention of ... 1105
test, heat balance ... 1451
water, high alkalinity treatment ... 1105
BOOTH, L. M. Handling boilers to prevent corrosion (*D*) ... 1138
Boussinesq, Professor, heat losses, cited ... 970
BOWMAN, AUSTIN LORD, obituary ... 1500
BOYD, JAMES E. *Elasticity and Strength of Stoneware and Porcelain* ... 795
Boyle's law, flow of air through orifice meters, cited ... 784
Brake, friction ... 1290, 1428
rope ... 1428
water ... 1430
webb water ... 1429
Brandeis, Louis D., Taylor memorial, quoted ... 1481
BRASHEAR, DR. JOHN A. *Science in its Relation to Engineering* ... 531
President, 1915, biography ... 1
Stoneware and porcelain strength (*D*) ... 819
BRAUN, C. F. *The Surface Condenser* ... 203
Heat transfer apparatus (*D*) ... 78
Heat transfer apparatus, cited ... 82
BRIGHAM, LUCIEN MAXWELL, obituary ... 1501
BRIGHT, HOLSTEIN DEHAVEN, obituary ... 1501
Brill, G. M., testing heat insulators, cited ... 922
Brinell tests of steel ... 41
BROOKS, L. C. *Electric Operation and Automatic Electric Control for Machine Tools* ... 1183
BRYANT, F. J. Private vs. purchased power (*D*) ... 584
BUCKINGHAM, EDGAR. Heat transfer apparatus (*D*) ... 72
*Model Experiments and the Forms of Empirical Equations* ... 263
Model experiments, quoted ... 75
BUNNELL, STERLING H. Production and costs (*D*) ... 120
BURLINGAME, LUTHER D. *Automatic Mechanical Control of Lathes and Screw Machines* ... 1143
Safety and the manufacturer (*D*) ... 896
Safety code for abrasive wheels (*D*) ... 1228
Strength of gear teeth (*D*) ... 529
BUSHNELL, FRED N. Private vs. purchased power (*D*) ... 580
BUTTERFIELD, THOMAS E. *On Measuring Gas Weights* ... 143

CALLAWAY, C. R. Modern electric elevators (*D*) ... 747

PAGE
Callendar, Professor, resistance to heat transfer, cited....64, 207
Calorimeters, coal .... 1287
gas .... 1287
Junker gas .... 1418
Mahler coal .... 1417
steam ....1286, 1412
CAMERON, H W. *The Attitude of the Employer towards Accident Prevention and Workmen's Compensation*.... 899
CARDULLO, FORREST E. Corrugated furnaces (*D*).... 35
Production and costs (*D*).... 117
CARPENTER, ALFONSO H., obituary.... 1538
CARPENTER, R. C. Stoneware and porcelain strength (*D*).... 814
Tests on the White steam car, cited.... 615
CARY, A. A. Water tube boiler circulation (*D*).... 1038
CASE, A. A. *Laps and Lapping*.... 297
Cement, hydration of portland.... 237
CHERRY, WILLIAM ALEXANDER, JR., obituary.... 1501
Chimneys, proportioning .... 1065
CHRISTIE, A. G. Proportioning chimneys (*D*).... 1084
Circulation in water tube boilers.... 1502
CLARK, JOHN HENRY, obituary.... 1502
Clearance, measurement by water.... 1400
Coal, analysis apparatus.... 1287
nitrogen content of American.... 1261
proximate analysis .... 1418
sampling .... 1457
sampling and drying.... 1300
screens for sizing.... 1283
sizes of bituminous.... 1411
ultimate analysis .... 1419
COLE, F. J. Parallel and radial loco axles (*D*).... 685
Collecting samples of field concrete, illustrated.... 245
Combustion, air for.... 1312
Concrete, beams, design of.... 225
making of .... 237
Condenser, resistance .... 48
heat transfer in.... 47
high vacuum surface.... 975
surface, tests .... 1403
surface .... 203
fluid temperatures .... 216
piping .... 218
principles of design.... 204
ratings .... 219
temperature difference .... 211
zone .... 996
Connors Creek plant of Detroit Edison Company.... 1085

PAGE
Constitutional Convention ..... 13
Corrosion, prevention in boilers ..... 1105
Costs, relation to production ..... 109
Council report ..... 4
Cowles, E. P., hollow axles for locomotives, cited ..... 660
COYLE, ANDREW M. Modern electric elevators (*D*) ..... 745
Cramer, E., hydration of cement, cited ..... 237
CRAMER, ROBERT. *Higher Steam Pressures* ..... 597
CRANSTON, RAYMOND EARL, obituary ..... 1502
Crossley by-product gas producer ..... 1240
CROWLEY, REGINALD W. Diesel engine and application (*D*) ..... 473
CUSHING, GEORGE HARWOOD, obituary ..... 1503
CUTTER, LAWRENCE E. *The Strength of Gear Teeth* ..... 503

DAUGHERTY, R. L. Unique hydraulic power plant (*D*) ..... 1062
Davis, air lift pump tests, cited ..... 1014
DAWES, HERBERT N. Steam pipe coverings (*D*) ..... 970
DEAN, F. W. *Design of Fire Tube Boilers and Steam Drums* ..... 619
*The Use of Corrugated Furnaces for Vertical Fire Tube Boilers* ... 31
DeBergues, locomotive design, cited ..... 664
DE LAVAL, C. GEORGE. Turbine pump design (*D*) ..... 104
DE LEEUW, ADOLPH L. Safety code for abrasive wheels (*D*) ..... 1229
DE WOLF, ROGER. Diesel engine and application (*D*) ..... 468
DICKIE, GEORGE W. Diesel engine and application (*D*) ..... 472
*Mechanical Engineering at the Panama-Pacific International Exposition* ..... 413
Diesel engine and application ..... 447
applications of ..... 451
comparative costs ..... 464, 473
design ..... 452
economy and efficiency ..... 459
fuels ..... 456
operating and depreciation ..... 461
weights and costs ..... 462
Dimensional reasoning ..... 178
DOANE, WILLIAM H., obituary ..... 1503
DODGE, A. R. Experiments and equations (*D*) ..... 294
DODGE, JAMES MAPES, obituary ..... 1504
Taylor memorial, quoted ..... 1495
Door-lock on extractor, illustrated ..... 877
DUBOIS, AUGUSTUS J., obituary ..... 1505
Duff by-product gas producer ..... 1237, 1239, 1249
gas producer stirrer ..... 1251
DUNCAN, ALBERT GREENE. *Heating by Forced Circulation of Hot Water in Textile Mills* ..... 543
DURBAN, THOMAS E. Fire tube boiler design (*D*) ..... 632
Dynamometer ..... 1431

PAGE

absorption ..... 1290
belt ..... 1432
electric ..... 1433
transmission ..... 1290

EBERHARDT, H. J. Electric operation for machine tools (*D*) ..... 1216
Eberle, Chas., temperature drop from steam to pipe, cited ..... 933
testing heat insulators, cited ..... 922, 933
Efficiency, surface, in condensers ..... 993
EHRHART, R. N. High vacuum surface condensers (*D*) ..... 1007
heat transmission in condensers, quoted ..... 976
Ejector, cam-actuated, for stamping press, illustrated ..... 879
air actuated ..... 880
Electric sockets, rolled threads for ..... 25
Electrical instruments, use and calibration ..... 1434
testing ..... 1291
Elevator door lock, automatic, illustrated ..... 882
Elevators, modern electric ..... 705
Employers and accident prevention ..... 899
Employment work ..... 9
Engine, ideal, heat consumption ..... 1441
heavy oil ..... 477
triple expansion, steam accounted for ..... 1452
turbine vs. ..... 751
Engineer and insurance ..... 591
Reserve corps ..... 13
Engineering foundation, the ..... 10
methods, application of ..... 633
Panama-Pacific Exposition ..... 351
science in relation to ..... 531
Equations, empirical, and model experiments ..... 263
ERNST, A. E. Heating textile mills by hot water (*D*) ..... 563
ESTRADA, RAFAEL, obituary ..... 1506
Excavating for foundations ..... 826

FAIR, CHARLES. Safety code for abrasive wheels (*D*) ..... 1230
Fannon, Wm. A., Taylor memorial, quoted ..... 1468
Fans, rules for testing ..... 1342
FARMER, F. M. Stoneware and porcelain strength (*D*) ..... 816
FARMER, L. P. Steam pipe coverings (*D*) ..... 969
Feed water heater resistance ..... 48
FENNER, D. C. Production and costs (*D*) ..... 124
FENNER, HERBERT NICHOLAS, obituary ..... 1507
Finances, 1915 ..... 6
Fink, Pius, locomotive design, cited ..... 668
Fireboxes, corrugated ..... 31
Fire hose specifications ..... 14

PAGE
FLANDERS, RALPH E. Automatic control of machines (*D*) ..... 1177
Electric operation for machine tools (*D*) ..... 1217
Production and costs (*D*) ..... 122
Safety code for abrasive wheels (*D*) ..... 1229
Flanges, standard, acknowledgment ..... 1539
Float rods ..... 1407
Flow of air through orifice meters ..... 765
Flue gas temperatures, vertical boilers ..... 37
Fluids, friction of disk in ..... 83
Foundations ..... 821
FOWLER, GEORGE L. Parallel and radial loco axles (*D*) ..... 679
Water tube boiler circulation (*D*) ..... 1035
FREEMAN, JOHN R. Experiments and equations (*D*) ..... 295
Hydration of cement (*D*) ..... 257
Freminville, Charles de, Taylor memorial, quoted ..... 1486
Fretl, G., locomotive design, cited ..... 672
Friction of bearings ..... 167
of disk in turbine pumps ..... 83
Fuel, analysis of liquid ..... 1420
character of ..... 1304
oil and gas, tests ..... 1313
valve, Sabathé, illustrated ..... 486
Furnace efficiency ..... 1448
Furnaces, corrugated, for vertical boilers ..... 31
FURNESS, RADCLYFFE. Axle shaft (*D*) ..... 164

Gages, draft ..... 1286
pressure ..... 1283
vacuum ..... 1283
Gale, Professor, sooted surface, cited ..... 1070
Galloway, Elijah, history and progress of the steam locomotive, 1831, cited ..... 657
GANTT, H. L. *The Relation between Production and Costs* ..... 109
Taylor memorial, quoted ..... 1466
Gas, analysis apparatus ..... 1287
and air measuring ..... 1282
engines, rules for testing ..... 1389
flow, formula for ..... 768
measuring of ..... 1408
pressure in holder, varying temperature ..... 772
producers, by-product, history of ..... 1231
producers, rules for testing ..... 1378
sampling ..... 1300, 1302
weights, measuring ..... 143
Gay-Lussac's law, flow of air through orifice meters, cited ..... 784
Gear teeth, arc of action ..... 509
failure ..... 513, 519

PAGE
strength of ..... 503
value of *y*, Lewis formula..... 515
velocity coefficients .....505, 512
GEIBEL, FREDERICK E. *Boiler Water Treatment*..... 1117
Handing boilers to prevent corrosion (*D*)..... 1140
Gensch, M., boiler installations, cited..... 1013
GERRISH, WILLIAM H., obituary..... 1507
GIBBONS, JAMES O. Safety standards (*D*)..... 891
Gibson and Ryan, disk friction, quoted..... 91
GIBSON, GEO. H. *Performance and Design of High Vacuum Surface Condensers* ..... 975
Handling boilers to prevent corrosion (*D*)..... 1131
High vacuum surface condensers (*D*)..... 1008
Gibson's coefficient of disk friction..... 85
GILBRETH, F. B. Effect of humidity on belts (*D*)..... 140
GILLETT, CHARLES. *Laps and Lapping* (*D*)..... 336
GLEASON, KATE. Strength of gear teeth (*D*)..... 529
GODFREY, HOLLIS. *Application of Engineering Methods to the Problems of the Executive, Director and Trustee*..... 633
GOLDINGHAM, A. H. *The Heavy Oil Engine, its Present Status and Future Development* ..... 477
Goodrich, Caspar F., Taylor memorial, quoted.....1467, 1479
GOSS, W. F. M.. Parallel and radial loco axles (*D*)..... 686
individual motor drive for machines, quoted..... 1183
Grashof, temperature differences in condensers, cited..... 221
The surface condenser, quoted..... 204
GRAY, JOSEPH P. *The Engineer and the Business of Fire Insurance*.. 591
GREENE, ARTHUR M., JR. Corrugated furnaces (*D*)..... 34
Flow of air through orifice meters (*D*)..... 790
Heat transfer apparatus (*D*)..... 78
Steam pipe coverings (*D*)..... 971
Water tube boiler circulation (*D*)..... 1038
GRETH, JOHN CHARLES WILLIAM, obituary..... 1507
Grouven, gas producers, cited..... 1231
GURNEY, H. F. Modern electric elevators (*D*)..... 747

Hagans, Christian, oscillating levers in locomotive design, cited..... 665
HALL, KEPPELE. Production and costs (*D*)..... 121
HALSEY, JAMES TAGGART, obituary..... 1508
HANSEN, CARL M. *Standardization of Safety Principles*..... 867
HARDING, HOWARD. *Design of Rectangular Concrete Beams*..... 225
Harrison, Birge, Taylor memorial, quoted..... 1462
HATHAWAY, H. K. Automatic mechanical control of machines (*D*).... 1180
Electric operation for machine tools (*D*)..... 1216
Tributes to Frederick W. Taylor, collated by..... 1459
Haywood, Percival, hollow axles for locomotives, cited..... 660
Heat, balance ..... 1311

PAGE
conducted by insulators, formula for ..... 961
formulae, oil engines ..... 853
insulators, apparatus for testing, illustrated .....926, 929, 935, 937, 940
insulators, properties of ..... 921
loss to temperature difference, relation of ..... 966
rate of flow defined ..... 284
textile mills by hot water ..... 543
transfer apparatus, rational design ..... 47
transmission coefficient .....47, 205, 282, 975, 982, 983, 991
treatment of axle shaft ..... 151
treatment of steel ..... 39
HECK, ROBERT C. H. Heat transfer apparatus (*D*) ..... 70
Hempel apparatus ..... 1422
HENDERSON, GEO. R. Four-wheel trucks for passenger cars (*D*) ..... 698
Parallel and radial loco axles (*D*) ..... 676
HERRESHOFF, JOHN BROWN, obituary ..... 1509
HERSCHEL, CLEMENS. Unique hydraulic power plant (*D*) ..... 1051
HERSCHEL, W. H. Laws of lubrication of bearings (*D*) ..... 199
HERSEY, M. D. *On the Laws of Lubrication of Journal Bearings* ..... 167
Experiments and equations (*D*) ..... 292
Turbine pump design (*D*) ..... 106
HIBBARD, H. WADE. Axle shaft (*D*) ..... 166
Corrugated furnaces (*D*) ..... 34
Surface condenser (*D*) ..... 223
HICKSTEIN, ERNEST O. *The Flow of Air Through Thin-Plate Orifices* 765
HILL, EBENEZER, obituary ..... 1509
HIRSHFELD, C. F. *The Connors Creek Plant of the Detroit Edison Company* ..... 1085
Holders, rise and fall of, varying temperature .....774, 775
HOLMES, JOSEPH AUSTIN, obituary ..... 1510
Hopkinson, Professor, heat flow and temperature distribution, cited .... 865
HOWE, HENRY M. Heat treatment of steel (*D*) ..... 45
Humidity, effect on belts ..... 129
tables of ..... 1412
HUTTON, FREDERICK R. Safety and the manufacturer (*D*) ..... 896
Safety standards (*D*) ..... 884
Hydraulic power plant, unique ..... 1043
Hygrometers ..... 1286

ILLMER, LOUIS. *Oil Engine Vaporizer Proportions* ..... 845
Indicator diagram, combined ..... 1440
factor ..... 1441
receiver engine ..... 1442
Woolf engine ..... 1443
Indicators, steam engine ..... 1289
calibration ..... 1425
Ingersoll, theory of heat conduction, cited ..... 931

PAGE

INGERSOLL, L. R. Steam pipe coverings (*D*) ..... 973
Insurance, the engineer and ..... 591
International Engineering Congress, 1915 ..... 12
IRWIN, JOHN W. Safety standards (*D*) ..... 888
ISHERWOOD, BENJAMIN FRANKLIN, obituary ..... 1510

JACKSON, JOHN PRICE. Accident prevention (*D*) ..... 906
JACOBUS, D. S. Higher steam pressures (*D*) ..... 615
testing heat insulators, cited ..... 922
JAMES, H. D. Electric operation for machine tools (*D*) ..... 1205
JOHNSON, NATHAN C. *Some Mechanical Features of the Hydration of Portland Cement and the Making of Concrete* ..... 237
making of concrete, cited ..... 237
JOHNSON, ROBERT. Modern electric elevators (*D*) ..... 746
Johnstone system of locomotive design, cited ..... 665
Joplin tests on orifice meter disks ..... 769
Jordan, H. P., heat transmission in condensers, cited ..... 1001
Josse, E., heat transmission in condensers, cited ..... 984
rise of water temperature in condensers, quoted ..... 986
tests of a feedwater heater, quoted ..... 990

Kapff, S., determining the value of lubricating oils, cited ..... 199
KATTE, E. B. Four-wheel trucks for passenger cars (*D*) ..... 702
Parallel and radial loco axles (*D*) ..... 680
KENT, WILLIAM. Handling boilers to prevent corrosion (*D*) ..... 1133
Higher steam pressures (*D*) ..... 610
Production and costs (*D*) ..... 125
Water tube boiler circulation (*D*) ..... 1037
Kerr, E. W., heat transmission in condensers, cited ..... 981
KIDDER, WALTER M. Safety standards (*D*) ..... 890
KIESEL, W. F., JR. Fire tube boiler design (*D*) ..... 631
Parallel and radial loco axles (*D*) ..... 675
Kingsbury, A., oiliness of lubricants, cited ..... 199
Kirchweger, coupling locomotive axles, cited ..... 668
Klein and Lindner, hollow axles, cited ..... 661
Klose system of locomotive design, cited ..... 670
KNIGHT, C. D. Electric operation for machine tools (*D*) ..... 1215
KNIGHT, W. A. *Laps and Lapping* ..... 297, 338
Köchy system of locomotive design, cited ..... 668
Koechlin, André, four-axle locomotive ..... 663
Krauss, slotted rods in locomotive design, cited ..... 670

Larard, C. E., strength of castellated or splined shafts, quoted ..... 155
Larpent, coupling locomotive axles, cited ..... 665
Lathes, automatic mechanical control of ..... 1143
LAW, FRANK E. Safety and the manufacturer (*D*) ..... 897
Safety standards (*D*) ..... 885

PAGE
Leakage tests of engines ... 1400
le Chatelier, Henri, Taylor memorial, quoted ... 1484
LELAND, E. D. Flow of air through orifice meters (*D*) ... 786
Lewis, Wilfred, strength of gear teeth, cited ... 526
Taylor memorial, quoted ... 1465, 1476
LINDQUIST, DAVID. *Modern Electric Elevators and Elevator Problems* ... 705
Local meetings ... 7
Locomotive, axles, parallel and radial ... 653
rules for testing ... 1361
testing stations ... 1447
tests ... 1448
LOEB, LEO. Heat transfer apparatus (*D*) ... 71
heat transmission in condensers, cited ... 985, 1005
High vacuum surface condensers (*D*) ... 1006
LOYD, JOHN, obituary ... 1511
Lubricants, action of ... 312
individual ... 317
Lubrication of journal bearings, laws of ... 167
Lucke, C. E., heat transfer, quoted ... 48
LUCKETT, GUSTAVUS TYLER, obituary ... 1512
LYMAN, DWIGHT E., obituary ... 1512
LYMN, ARTHUR H. *Gas Producers with By-Product Recovery* ... 1231
Lymn system by-product gas producer ... 1247, 1248
LYNCH, T. D. Stoneware and porcelain strength (*D*) ... 817
Lyon, Frank, boiler corrosion, quoted ... 1124
Alkaline solutions, cited ... 1141

MCARTHUR, ROBERT, obituary ... 1513
MCBRIDE, JAMES, obituary ... 1513
MCELROY, JAMES FINNEY, obituary ... 1514
MCFARLAND, WALTER M. Handling boilers to prevent corrosion (*D*) ... 1129
MCINTOSH, WILLIAM, obituary ... 1514
MCKEE, ROBERT A., obituary ... 1515
MCMILLAN, L. B. *The Heat Insulating Properties of Commercial Steam Pipe Coverings* ... 921
MACGREGOR, W. F. Corrugated furnaces (*D*) ... 32
Machine tools, electric operation for ... 1183
Machines, automatic mechanical control of ... 1143
automatic electric control of ... 1183
MAIN, CHAS. T. *Foundations* ... 821
MALLET, ANATOLE. *Operation of Parallel and Radial Axles of a Locomotive by a Single Set of Cylinders* ... 653
Management, principles of, and industrial safety ... 909
MANN, ARTHUR S., obituary ... 1515
MANNING, CHAS. H. Corrugated furnaces (*D*) ... 35
MARSHALL, NORMAN. Automatic mechanical control of machines (*D*) ... 1180
MARX, GUIDO H. *The Strength of Gear Teeth* ... 503

PAGE
MATTON, FREDERICK V., obituary ..... 1516
Maurer, Principles of Reinforced Concrete, cited ..... 225, 227
Mean effective pressure from indicator diagrams ..... 1455
MELLIN, CARL J. Parallel and radial loco axles (*D*) ..... 675
MENZIN, A. L. *Proportioning Chimneys on a Gas Basis* ..... 1065
Merica, P. D., internal stresses in brasses, cited ..... 818
MERSHON, RALPH D. Stoneware and porcelain strength (*D*) ..... 813
Meteorological Tables, cited ..... 141
Meters, comparative accuracy of ..... 786
  current ..... 1407
  orifice, flow of air through ..... 765
  smoke ..... 1423
  water, calibrating ..... 1403
  water, steam and gas ..... 1280
Meyer, J. J., articulated locomotives, quoted ..... 674
Michaelis, Dr. Wm., Sr., hardening of cement, cited ..... 238
MITCHELL, WALTER K., obituary ..... 1516
MIX, MELVILLE W. *Modern Movement for Safety from Standpoint of Manufacturer* ..... 893
Model experiments and empirical equations ..... 263
  flight of projectiles ..... 278
  flow of liquids ..... 266
  general theorem ..... 264
  heat transmission ..... 282
  resistance of immersed bodies ..... 271
Mond by-product gas producer ..... 1234, 1249
Mond-Trump by-product gas producer ..... 1250
MONKS, A. G. Foundations (*D*) ..... 840
Moore by-product gas producer ..... 1243
MOORE, H. F. Laws of lubrication of bearings (*D*) ..... 199
MORRIS, EDWARD THOMAS, obituary ..... 1517
MORRIS, HENRY G., obituary ..... 1517
MOSS, SANFORD A. Measuring gas weights (*D*) ..... 149
  Turbines vs. engines (*D*) ..... 763
MÜLLER, TEILE HENRY, obituary ..... 1518
MUMFORD, EDGAR H., obituary ..... 1519
Münsinger, F., radiation rate in boilers, cited ..... 1011
MYERS, CORNELIUS T. Axle shaft (*D*) ..... 165

NAGLE, A. F. Effect of humidity on belts (*D*) ..... 142
National Association of Master Steam and Hot Water Fitters, standard flanges, acknowledgment ..... 1539
Naval Consulting Board, U. S. ..... 13
Navy compound for boilers ..... 1126
  feed water heater, quoted ..... 63
NEDDEN, F. ZUR. *Influence of Disk Friction on Turbine Pump Design* .. 83
  hydraulic power house, cited ..... 1052

PAGE
Laws of lubrication of bearings (*D*) ..... 200
NEELY, FRANK H. Production and costs (*D*) ..... 120
NEFF, ELMER H. Automatic control of machines (*D*) ..... 1178
Electric operation for machine tools ..... 1217
NEWMAN, M. F. Handling boilers to prevent corrosion (*D*) ..... 1132
Nicol, B. J., condensers, quoted ..... 67
Nitrogen in American coals ..... 1260
Norris, locomotive design, cited ..... 673
Norton, Prof. C. L., testing heat insulators, cited ..... 922, 931, 970
Nozzles ..... 1407
NUSIM, MELACH I. Experiments and equations (*D*) ..... 294
Nusselt, compressed gases, cited ..... 286
conductivity of poor conductors, cited ..... 954

Oil and gas fuels, tests ..... 1313
Oil engine, Burmeister and Wain, illustrated ..... 494
comparative power costs ..... 488, 499
comparison of fuels ..... 496
De La Vergne, illustrated ..... 481, 491, 495
heavy ..... 477
Junkers, illustrated ..... 483
McIntosh and Seymour, illustrated ..... 493
piston, M. A. N. (Germany), illustrated ..... 485
rules for testing ..... 1389
Ruston, illustrated ..... 482
Snow, illustrated ..... 489
vaporizer proportions ..... 845
Willans-Robinson, illustrated ..... 482
Ordway, Prof. J. M., testing heat insulators, cited ..... 922
Orifice formula ..... 1407
Orrok, George A., heat transfer, quoted ..... 49, 53, 61
cited ..... 60, 64, 80, 208
heat transfer in condensers, cited, quoted ..... 978, 983, 985, 1001, 1004
Orsat apparatus ..... 1421

PACKHAM, FRANK RUSSELL, obituary ..... 1520
PALMER, LEW RUSSELL. Accident prevention (*D*) ..... 907
Panama-Pacific International Exposition, engineering features ..... 351
electrical ..... 383
fire protection ..... 372
gas distribution ..... 396
hydraulic fills ..... 352
International Exposition, mechanical engineering ..... 413
mechanical ..... 376
sewer system ..... 366
structural ..... 353
telephone system ..... 410

PAGE
transportation ..... 366
water supply ..... 397
Pan-American Scientific Congress, Second ..... 14
Pannell, experiments with water and air, cited ..... 269
PARKER, JOHN, obituary ..... 1521
PARKER, JOHN C. Water tube boiler circulation (*D*) ..... 1037
PARKS, F. W. Heating textile mills by hot water (*D*) ..... 563
Passenger cars, four-wheel trucks for ..... 689
PATTERSON, F. D. Safety and the manufacturer (*D*) ..... 898
PEARSON, FRED STARK, obituary ..... 1521
Peclet, sooted surface, cited ..... 1069
Π theorem, deduction of ..... 289
Pier foundations ..... 837
PIEZ, CHARLES. Production and costs (*D*) ..... 119
PIGOTT, R. J. S. Higher steam pressures (*D*) ..... 611
heat transmission in condensers, quoted ..... 976, 980
Private vs. purchased power (*D*) ..... 583
Pile driver hammer, formulae for ..... 822
Pipe coverings, apparatus for testing ..... 934
conductivities of various ..... 968
efficiencies and savings with ..... 958
threads, American Briggs Standard ..... 1264
straight basic sizes ..... 1264
electric caps ..... 1270
formulae for basic sizes ..... 1264
formulae for tolerances ..... 1269
report ..... 1263
tolerances ..... 1265
Piston, oil engine, M. A. N., illustrated ..... 485
Pitot tubes ..... 1408
Planimeters ..... 1289
Poiseuille's ratio ..... 50, 60
POLAKOV, WALTER N. Higher steam pressures (*D*) ..... 614
Private vs. purchased power (*D*) ..... 587
Production and costs (*D*) ..... 117
POMEROY, L. R. Four-wheel trucks for passenger cars (*D*) ..... 699
Porcelain and stoneware, strength of ..... 795
PORTER, HARRY FRANKLIN. Hydration of cement (*D*) ..... 256
Power for textile mills, private vs. purchased ..... 565
Power plant apparatus, rules for performance tests ..... 1273
unique hydraulic ..... 1043
Power tests, apparatus for pumping engines ..... 1411
bituminous coal sizes ..... 1411
calculation examples; air compressor tests ..... 1455
heat balance ..... 1453
steam accounted for ..... 1452
calorimeters, steam ..... 1412

PAGE
Junker gas ..... 1418
Mahler coal ..... 1417
chart of boiler log ..... 1437
clearance measurement in engines ..... 1400
diagram factor ..... 1441
dynamometers ..... 1431
electrical instruments, use and calibration of ..... 1434
friction brakes ..... 1428
fuel analyses, coal ..... 1418
gas ..... 1421
liquid ..... 1420
furnace efficiency ..... 1448
general instructions ..... 1277
heat balance for boiler test, calculation of ..... 1451
heat consumption, steam plant ..... 1439
ideal, Rankine cycle ..... 1441
Hempel apparatus ..... 1422
humidity table ..... 1412
indicators, use and calibration of ..... 1425
individual codes ..... 1304
blowers, compressors and fans ..... 1342
boiler ..... 1304
complete power plants ..... 1348
engine, reciprocating steam ..... 1319
gas and oil engine ..... 1389
gas producer ..... 1378
locomotive ..... 1361
pumping machinery ..... 1335
turbine, steam ..... 1330
water wheel ..... 1396
instruments for boiler tests, location of ..... 1438
leakage tests ..... 1400
general precautions ..... 1402
inside plunger pump ..... 1446
locomotive testing stations ..... 1447
location of apparatus for ..... 1448
m. e. p., method of determining ..... 1455
Orsat apparatus ..... 1421
pitot tubes ..... 1408
pyrometers ..... 1412
report of committee ..... 1273
Ringlemann smoke chart ..... 1423
sampling and drying coal and ash ..... 1300, 1457
smoke meter ..... 1423
standards ..... 1295
the combined diagram ..... 1440

PAGE

water measurement by weirs, venturi meters, etc., orifice formula, float rods, current meters ... 1407
water meters, calibrating ... 1403
water rheostats ... 1436
Pressure of gas in holder, varying temperature ... 772
PRICE, GEORGE M. Safety standards (*D*) ... 892
PRICE, WM. T. Oil engine vaporizer proportions (*D*) ... 862
Production and costs, relation ... 109
Pump, turbine, disk friction in ... 83
plunger, leakage test ... 1446
Pumping engines ... 1411
machinery, rules for testing ... 1335
Pyrometers ... 1286, 1412

QUIGLEY, JAMES EDWIN, obituary ... 1522

RANKIN, THOMAS L., obituary ... 1523
Rankine, G. A., cycle efficiency ... 1441
researches with cement, cited ... 253
Rarchaert, Lucien, oscillating levers in locomotive design, cited ... 665, 668
REEVE, S. A. Tests of gas-flow (*D*) ... 790
Refuse, sampling ... 1301
REISS, GEORGE T., obituary ... 1523
REPLOGLE, MARK A. *Unique Hydraulic Power Plant at the Henry Ford Farms* ... 1043
Report on safety code for abrasive wheels ... 1221
of Power Test Committee ... 1273
*Reports of the Committee on Standardization of Special Threads for Fixtures and Fittings* ... 25, 1263
REYNOLDS, FRANK W. *Relative Value of Private and Purchased Electric Power for Textile Mills* ... 565
REYNOLDS, P. E. Surface condenser (*D*) ... 222
Reynolds, Osborne, loss of head in condensers, quoted ... 53
scientific papers, quoted ... 50
Rheostats, water ... 1291, 1436
RICE, RICHARD H. Higher steam pressures (*D*) ... 613
Ringlemann smoke chart ... 1423
RINK, GEO. W. Four-wheel trucks for passenger cars (*D*) ... 701
Rise and fall of holders, varying temperature ... 774, 775
ROCKWOOD, G. I. Higher steam pressures (*D*) ... 613
ROESTI, PAUL G., obituary ... 1523
Rowan by-product gas producer ... 1242
ROWLEY, R. L. Diesel engine and application (*D*) ... 468
ROYS, FRANCIS W. *The Effect of Relative Humidity on an Oak Tanned Leather Belt* ... 129
RUSHMORE, D. B. Production and costs (*D*) ... 117

Safety and the manufacturer ... 893

PAGE
Safety code for abrasive wheels ..... 1221
cups, cylinders and sectional ring wheels ..... 1223
general safety requirements ..... 1223
precautionary suggestions ..... 1228
protection flanges ..... 1221
protection hoods ..... 1223
safety devices ..... 1221
Safety, industrial, and management ..... 909
principles, standardization of ..... 867
Sager, H., hydration of cement, cited ..... 237
SAMES, C. M. Steam pipe coverings (*D*) ..... 973
Saph, experiments with water, cited ..... 269
SARGENT, WILLIAM F., obituary ..... 1524
Scale, prevention in boilers ..... 1105
Scales, weighing ..... 1279
SCARBOROUGH, FRANCIS WINTHROP, obituary ..... 1524
Schell, F. W., tests of venturi meter, cited ..... 786
Schoder, experiments with water, cited ..... 269
Science in relation to engineering ..... 531
Scleroscope tests of steel ..... 41
Screens for sizing coal ..... 1283
Screw machines, automatic mechanical control of ..... 1143
Sederholm, J. J., Taylor memorial, quoted ..... 1489
September meeting ..... 339
SETZ, H. R. Diesel engine and application (*D*) ..... 466
development of the Diesel engine, cited ..... 453
Heavy oil engine (*D*) ..... 501
Shafts, strength of splined ..... 151
Shepherd, researches with cement, cited ..... 253
SHERRERD, JOHN M., obituary ..... 1525
Smith, J. A., heat transfer in condensers, cited ..... 982
Smithsonian Physical Tables, cited ..... 51
Smoke, chart, Ringlemann ..... 1423
determination ..... 1287
meter ..... 1423
Society affairs ..... 1
annual meeting, 1915 ..... 346
committees, reports, 1915 ..... 8
Power Tests ..... 9
report ..... 1273
special ..... 8
Standardization of special threads for fixtures and fittings ..... 8
report on rolled threads ..... 25
report on straight threads ..... 1263
council report, 1915 ..... 4
employment work, 1915 ..... 9

PAGE
fire hose specifications ..... 14
finances, 1915 ..... 6
local meetings, 1915 ..... 7
meetings, 1915 ..... 7
spring meeting, 1915 ..... 22
meetings, January—June, 1915 ..... 15
September—December, 1915 ..... 339
meetings of sections ..... 341
membership, 1915 ..... 4
prizes ..... 9
publications, 1915 ..... 7
relations with other societies ..... 10
with public ..... 12
sections ..... 6, 7, 15, 341
September meeting ..... 339
student branches ..... 9
Sommerfeld's theory of lubrication, cited ..... 193
Specific gravity, influence of on disk friction ..... 93
Speed measuring apparatus ..... 1289
Spring meeting ..... 22
Standardization, rolled threads for screw shells ..... 25
of safety principles ..... 867
straight pipe threads ..... 1263
Standards of capacity, efficiency and economy ..... 1295
Stanton, design of surface condensers, cited ..... 983
experiments with water and air, cited ..... 269
friction of liquids in pipes, cited ..... 286
Stanton and Pannell, surface friction of fluids, cited ..... 74
Steam, efficiency at various pressures ..... 602, 603
ideal efficiency curves for ..... 599
measuring ..... 1280
sampling ..... 1300, 1301
tables ..... 1292
temperature—entropy diagram ..... 601
turbine, rules for testing ..... 1330
Steam engine, rules for testing ..... 1319
Steam pipe coverings, properties of ..... 921
Steam plant, heat consumption ..... 1439
test, heat balance ..... 1453
Steam power plants, rules for testing ..... 1348
Steam pressures, higher ..... 597
Steel shaft, strength of ..... 151
Steels, properties of heat-treated ..... 39
STETSON, GEORGE RIPLEY, obituary ..... 1526
STEVENS, JOHN A., Private vs. purchased power (*D*) ..... 581
STILLMAN, HOWARD. Handling boilers to prevent corrosion (*D*) ..... 1134
temperature—entropy diagram ..... 601
turbine, rules for testing ..... 1330

PAGE
Stoneware and porcelain strength ..... 795
Stott, H. G., heat transmission in condensers, quoted ..... 976, 980
testing heat insulators, cited ..... 922, 925
STOUT, R. PAUL, obituary ..... 1526
STRATTON, H. F. Electric operation for machine tools (*D*) ..... 1208
Stratton, S. W., adoption of safety standards, quoted ..... 888
Surface condensers, high vacuum ..... 975
efficiency in ..... 993

Tachometers ..... 1289
TAYLOR, FREDERICK WINSLOW, obituary ..... 1527
tributes to ..... 1459
Temperature, gradient data ..... 932
influence of on disk friction ..... 93
Testing soil for foundations ..... 825
Tests, instructions regarding power plant ..... 1277
of power plant apparatus, codes for ..... 1273
Textile mills, heating by hot water ..... 543
Thermometers ..... 1284
THOMAS, CARL C. Higher steam pressures (*D*) ..... 614
Gas-holder tests (*D*) ..... 789
THOMAS, PERCY H. Stoneware and porcelain strength (*D*) ..... 818
THOMPSON, C. BERTRAND. Production and costs (*D*) ..... 125
THOMPSON, SANFORD E. Foundations (*D*) ..... 841
Taylor memorial, quoted ..... 1468, 1470
THOMSON, S. G. Four-wheel trucks for passenger cars (*D*) ..... 698
Threads, rolled, for screw shells ..... 25
straight pipe ..... 1263
Thurston, Prof. R. H., high-pressure steam, cited ..... 597
Time lost and time worked, compared ..... 894
TOLMAN, JAMES P., obituary ..... 1529
TORREY, HERBERT GRAY, obituary ..... 1529
Towl, Forrest M., test of 85-h.p. oil engine, cited ..... 498
Towne, Henry R., Taylor memorial, quoted ..... 1460, 1496
TRAVER, WILBER H., obituary ..... 1530
Trevethick's gear transmission for locomotives, cited ..... 653
Trucks for passenger cars ..... 689
TRUMP, E. N. Handling boilers to prevent corrosion (*D*) ..... 1139
Turbine pump design ..... 83
Turbines vs. engines ..... 751
Turbo-generator, rules for testing ..... 1330
Turneaure, principles of reinforced concrete, cited ..... 225, 227

Unaflow engine, comparative cost of ..... 608
Units, conversion of metric and English ..... 1299
definitions of ..... 1295
measures of capacity ..... 1295
measures of efficiency ..... 1297

PAGE

Unwin, W. C., fluid friction, quoted ..... 85
UPSON, M. M. Foundations (*D*) ..... 837

Valve, Sabathé fuel ..... 486
Vanderbilt firebox ..... 34, 36
VAN DERHOEF, GEO. N. Effect of humidity on belts (*D*) ..... 139
Vaporizer, caps, oil engines ..... 852
  proportions, oil engine ..... 845, 846, 848
VATER, F. F. Handling boilers to prevent corrosion (*D*) ..... 1137
VAUCLAIN, S. M. Parallel and radial loco axles (*D*) ..... 682
Velocity and viscosity in condenser operation ..... 1001
Venturi tubes ..... 1406
Viscosity and velocity in condenser operation ..... 1001
  effect of, in condensers ..... 50
  influence of on disk friction ..... 93
  of lubricants ..... 171
Vogel system of locomotive design, cited ..... 672
Volume of air in holder, varying temperature ..... 773
VOORHEES, G. T. Flow of gases through orifices (*D*) ..... 789

WALDO, LEONARD. Safety and the manufacturer (*D*) ..... 898
  Steam pipe coverings (*D*) ..... 969
WALDRON, F. A. Foundations (*D*) ..... 843
WALKER, P. F., Flow of air through orifice meters (*D*) ..... 783
WALLACE, L. W. Experiments and equations (*D*) ..... 295
WALLER, C. R. Turbines vs. engines (*D*) ..... 763
Wallichs, A. O., Taylor memorial, quoted ..... 1490
Walls, foundation, stability of ..... 833
WALSH, J. F. Handling boilers to prevent corrosion (*D*) ..... 1140
WARREN, JOHN E., obituary ..... 1531
Water, measurement of ..... 1405
  tube boiler circulation ..... 1011
  weighing and measuring ..... 1280
  wheels, rules for testing ..... 1396
WATSON, WILLIAM, obituary ..... 1532
WEBSTER, HOSEA. Water tube boiler circulation (*D*) ..... 1039
Weidner, air lift pump tests, cited ..... 1014
Weirs ..... 1405
WEST, ARTHUR. Measuring gas weights (*D*) ..... 149
WEST, THOMAS DYSON, obituary ..... 1532
Weymouth, C. R., draft losses, cited ..... 1071
Weymouth, T. R., investigation of orifices, cited ..... 787
WHITE, JAMES A. Production and costs (*D*) ..... 119
White, Sir William H., memorial ..... 13
WHITING, STEPHEN BETTS, obituary ..... 1533
WHITLOCK, ELLIOTT H. Stoneware and porcelain strength (*D*) ..... 818
WHITNEY, BAXTER D., obituary ..... 1534

PAGE
WICK, HENRY, obituary ..... 1535
WILKIN, J. T. Flow of air through orifice meters (*D*) ..... 789
WILLIAMSON, ALFRED, obituary ..... 1536
WILLISTON, ARTHUR L. Private vs. purchased power (*D*) ..... 585
WILSON, E. E. *A Basis for Rational Design of Heat Transfer Apparatus* ..... 47
Wöhler's experiments on reversal of stress, cited ..... 166
WOODARD, W. E. Parallel and radial loco axles (*D*) ..... 677, 681
Woodward, R. W., internal stresses in brasses, cited ..... 818
Woolson, O. C., boiler setting, cited ..... 628, 630
illustrated ..... 629
WRIGHT, ROY V. *Four-Wheel Trucks for Passenger Cars* ..... 689
parallel and radial loco axles (*D*) ..... 681
WYMAN, HORACE, obituary ..... 1536

YOUNG, C. D. Four-wheel trucks for passenger cars (*D*) ..... 702
parallel and radial loco axles (*D*) ..... 681
Young, gas producers, cited ..... 1231
Young, W. T., test of an orifice meter, cited ..... 787
YOUNGER, JOHN. *A Study of an Axle Shaft for a Motor Truck* ..... 151

ZIPF, JOHN PHILIP, obituary ..... 1537
Zoble, theory of heat conduction, cited ..... 931